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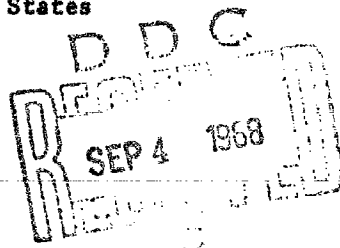
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NEWCASTLE DISEASE VIRUS CONJUNCTIVITIS INDUCED
IN HUMAN SUBJECTS EXPERIMENTALLY

Following is a translation of an article by
B. Latte and G. Pino of the University of Sassari
in the Italian-language periodical, Bollettino della Societa Italiana di Biologia Sperimentale
(Bulletin of the Italian Society of Experimental Biology), Vol. 27, 1951, pages 700-702.⁷

Newcastle disease virus (NDV) is the cause of a specific epizootic infection among fowl (avian pseudo-plague, or avian pneumoencephalitis) can give rise to conjunctival inflammation in man, sometimes accompanied by light general symptoms.

Since the first case of NDV was reported in man (Burnet, 1), there have been reported a relatively small number of cases consisting for the most part of isolated observations (Anderson, 2; Shimkin, 3; Radnot, 4; Freymann and Bang 5; etc.) with the exception of a limited focal area of epidemic described by Yaton, (6). There are at present 40 cases of conjunctivitis caused by NDV reported in the literature, all of subjects who became infected accidentally by infected material (cooks, poultry dealers, veterinaries, personnel carrying out experimental research on the virus, etc.); the first case in Italy was reported on in recent months by Borselle and Mantovani (7).

The present experiments studied the transmissibility to man of NDV cultivated in chicken embryos (virus strain supplied by the Istituto Sieroterapico Italiano); a vial of allantoic fluid from chicken embryos infected with the virus was deposited on the mucosa of the conjunctival fornix of the left eye of each of five volunteer subjects.

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After a brief period of incubation (12 to 24 hours) all the subjects began to experience an unpleasant feeling of a foreign body in the eye and dryness and itching of the conjunctiva. Objectively one noted above all edema of the eyelids, succulence and considerable hyperemia of the conjunctiva of the eyelids, particularly the lower lid; hyperemia and edema of the plica semilunaris and moderate congestion of the bulbar conjunctiva. The hemorrhagic phenomena of the conjunctiva noted by other authors was very minute in our subjects and consisted in only an occasional petechia. The cornea was observed daily with a slit lamp after application of fluorescein, but no lesions were seen at any time -- not even the smallest.

Follicles appeared very early and quickly increased in size and number, taking up a characteristic wren-like arrangement, particularly in the lower conjunctival fornix.

There was but little secretion, primarily of a lacrimal type.

From 24 to 48 hours after onset of the disease one could also note swelling of the preauricular ganglion, appearing enlarged (to the size of a pea) and moderately painful upon palpation.

Microscopic examination of the conjunctival secretion revealed the presence of but little mucus, a few lymphocytes, a very few polynucleates, epithelial cells which had flaked off and a complete absence of any microbes. No epithelial inclusion bodies could be found in any of the preparations made from scrapings of the epithelium of the conjunctiva, unlike the cases described by Keeney and Hunter.

The peak of inflammation was reached on the second to fourth days of the infection and then all the symptoms began to gradually recede spontaneously; the conjunctival follicles persisted over a greater period of time together with involvement of the preauricular ganglion. One could say that the conjunctivitis had been cured in all subjects during the third week, even though follicles could still be seen present in two of them also still experiencing a slight swelling of the ganglion.

The general symptoms experienced in two of the five cases comprised a general indisposition, chills and fever which never went above 37.5°; these symptoms appeared during the first 24 hours after the inoculation and persisted for about two days. Blood tests showed large changes in the general leukocyte picture both as to white cell count and percentage distribution of the various types of cells,

there being both leukopenia and a relative lymphocytosis.

Other laboratory tests (urinalysis, sedimentation rate, liver function tests) failed to bring out any evidence of a pathological condition.

Bacteriological examination of the washings of the conjunctiva gave negative results in all cases; up to the fourth day of the illness it was possible to isolate the virus from the conjunctival washings, inoculating chicken embryos with the material thus obtained. Fifteen days after the original infection a significant increase in specific antibodies was found in the circulation of these subjects (hemagglutination inhibiting test).

The picture of catarrhal conjunctivitis experimentally induced by us with NDV cultivated in chicken eggs showed the basic features of the same disease acquired spontaneously; it should be emphasized, though, that the symptoms observed by us were found to be less serious as a whole than those described by other authors.

References

- (1) M.J. Australia, 1945, 2, 313.
- (2) M.J. Australia, 1946, 1, 371.
- (3) Brit. J. Ophth., 1945, 30, 260.
- (4) Ophthalmologica, 1947, 113, 105.
- (5) Bull. Johns Hopkins Hosp., 1949, 84, 409.
- (6) Quoted by Shimkin (3).
- (7) Rass. It. d'Ottalmologia (Italian Review of Ophthalmology), 1950, 20, 452.

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